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ABSTRACT

Designed for a 40-hour course in first-responder medical training, this lesson plan teaches students how to control bleeding and bandage wounds. This lesson includes discussions on skin, the circulatory system, and blood; describes seven types of wounds; and explains four bleeding control methods. The lesson plan begins with information on the course for which the plan was developed; equipment and audiovisual aids; requirements for student materials; course objectives; bibliographic references; and special remarks for the instructor. Next, a step-by-step outline of the instructor's presentation is provided in a format, indicating the length of time and the equipment needed for each step of the lesson. Course handouts and transparency masters are included. (EJV)

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Recognition and Emergency Care of Wounds: Bleeding Control and Bandaging

First Responder Training
Lesson Plan No. 1

Robert Upton
Kapiolani Community College

Western Curriculum Coordination Center
Honolulu, HI

November, 1987

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LESSON PLAN

LESSON PLAN NO. 1	INSTITUTION: Kapiolani Community College	PAGE 1 OF 22 PAGES

COURSE OF INSTRUCTION AND COURSE NUMBER:	TOTAL HOURS:	LESSON TITLE:
First Responder Training	40	Recognition and Emergency Care of Wounds: Bleeding Control and Bandaging

DAY AND DATE OF INSTRUCTION:	HOURS	PLACE:
Thursday, November 5, 1987	50 minutes	University of Hawaii, Manoa, UA 3-Room 6

NO. OF STUDENTS:	REHEARSAL:	INSTRUCTOR AND ASSISTANTS:	STUDENT MATERIAL AND DRESS:
20	Oct. 29, 1987 Oct. 31, 1987	Robert Upton	Casual school dress Paper and pencil

REFERENCES: see attached sheet #1

EQUIPMENT AND AUDIO-VISUAL AIDS: see attached sheet #2

OBJECTIVES:

1. Identify seven types of wounds and list a distinguishing characteristic of each. 100% accuracy
2. Describe three methods of bleeding control. 100% accuracy
3. Identify and describe the location of seven pressure points for bleeding control. 75% accuracy
4. List six principles of bandaging. 75% accuracy
5. List and describe three bandaging techniques 75% accuracy

SPECIAL REMARKS:

Student will be expected to perform some simple skills.

1. Bleeding control using three given methods.
2. Find a radial pulse.
3. Instructor to monitor student's progress during lesson.
4. Students will be tested upon completion of the 40-hour course.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
1. Introduction. Today we are going to learn the lifesaving techniques of bleeding control and bandaging. Have any of you ever been involved at an accident scene where someone had severe bleeding and needed care or bandaging? What did you or the rescuer do?	4 min.	Lecture Ask rhetorical questions only.
a. Objectives: At the end of this 50 minute class you will be able to: 1) Correctly identify the seven types of wounds and list a distinguishing characteristic of each. 2) Demonstrate three bleeding control methods. 3) Identify and locate seven pressure points for bleeding control. 4) List the six principles of bandaging. 5) List three bandaging techniques.		Distribute handout of outline to students.
b. Standards: Standards of bleeding control and bandaging are based on time and speed. It's possible to bleed to death in 1-2 minutes, so bandaging and bleeding control must be accomplished timely. The whole procedure from determination of serious bleeding until the bandages are secured should take no more than 2-3 minutes.		
c. Reasons: The reasons for learning techniques of bandaging and bleeding control are that as First Responders you will often be the first at the scene of an accident and your action or inaction may save or loose a life.		
d. Others: We will be using overheads, slides of injured persons, and have demonstrations of bandages and bandaging.		Turn on overhead projector.
2. Explanation.	9 min.	Show overhead #1
a. In order to understand wounds and bleeding control, we first need to make some definitions and learn some new terminology. 1) Skin - The skin is the structure which a foreign material must travel through to be harmful to the human body. a) It composes 15% of the body's dry weight, consisting of three layers. 1. Epidermis - outer tough layer that is water proof and bacteria proof. 2. Dermis - middle layer, constitutes bulk of the skin, contains nerves, blood vessels,		Anatomy of the skin showing three layers and contents.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
and lymphatics. 3. Subcutaneous - inner most layer; contains fat and lower surfaces of blood and lymph systems. b) Any or all may be involved in the wound depending upon the etiology and physical factors at the time of injury. 2) Circulatory System a) The pulse and blood pressure are caused by the forceful contractions of the left ventricle. 1. A pulse is felt when one compresses an artery with his fingers against a bone or hard prominence. 2. At each contraction a wave of blood is forced out of the heart into the arteries, felt as the pulse. b) Arteries 1. Thick walled vessels that conduct blood away from the heart. 2. Branched into smaller and smaller vessels called arterioles. 3. Bleeding is usually bright red and spouts under high pressure. c) Capillaries 1. One cell thick blood vessels that connect arterioles with venules. 2. Blood moves slowly allowing exchange of gases and nutrients at the cellular level. 3. Capillary bleeding is characterized by a slow oozing under low pressure. d) Veins 1. Thinner walled vessels that conduct blood back towards the heart. 2. Small veins are called venules. 3. Bleeding from veins is characterized by a steady blood flow that will be darker than arterial blood.		Turn off overhead projector. — Turn on overhead projector. Show overhead #2 - Diagram showing the artery-capillary vein relationship.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
3) Blood a) Your body has approximately 5-6 liters of blood. b) Blood is composed of three main parts. 1. Plasma - fluid in blood through which the blood cells move. 2. Blood cells, red and white. a) Red blood cells help carry O_2 and CO_2 to and from the cells for energy and respirations. b) White blood cells assist with the body's immune systems to fight infection. 3. Clotting factors, fibrin and plateletes.		Turn off overhead
Question - Why is blood red? Answer - Because the iron atom in the hemoglobin molecule combines with oxygen to make a rust compound.		—
4) Description of the seven types of wounds, classified as open and closed. a) Contusion 1. Closed injury with no external bleeding, damage is internal within the skin. 2. Bleeding occurs but is not seen externally, appears as black and blue area due to accumulated blood beneath the skin, bruise or ecchymosis. b) Abrasion 1. Superficial scraping of the skin causing redness and capillary bleeding (open wound.) 2. Known as road burns, rash or strawberry. c) Avulsion 1. An avulsion is an open wound that has been torn, possibly has a flap of skin. 2. Difficult for long term care as large segments of skin and tissue may be torn off.	10 min.	Start slide show, machine on, lights off. Show slide #1 title Slide #2 diagram of a contusion Slide #3 photo of a contusion Slide #4 diagram of an abrasion Slide #5 photo of an abrasion Slide #6 diagram of an avulsion Slide #7 photo of an avulsion

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
d) Laceration 1. A laceration is an open wound with jagged edges often severe. 2. If deep, you must treat the wounds as though there may also be an associated fracture.		Slide #8 diagram of a laceration Slide #9 photo of a laceration
e) Incision 1. An incision is an open wound caused by a sharp object such as a knife or metal fragment. 2. The wound edges appear smooth. 3. Often internal damage is not evident. A knife may leave a 3/4" wide wound that is four inches deep.		Slide #10 photo of an incision
f) Puncture 1. A puncture wound is caused by impaling a sharp object into the skin (open.) 2. Impaled objects are to be left in place, secured with bandages and tape, transported securely.		Slide #11 diagram of a puncture Slide #12 photo of a puncture
Question - Why not remove an impaled object? Answer - The object itself may be holding pressure on a severed artery. Also, injury can be caused while removing a sharp object.		
g) Amputation 1. An amputation is complete severence of a limb of digit. 2. You must bring the severed limb with the patient, packed on ice, but kept dry, not direct contact with ice (i.e. plastic bag.)		Slide #13 photo of an amputation

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
b. Review types of wounds and distinguishing characteristics. 1) Contusion - bruise (ecchymosis) 2) Abrasion - superficial scraping 3) Avulsion - torn flaps 4) Laceration - jagged tear 5) Incision - sharp edges 6) Puncture - impaled, hole 7) Amputation - severed, missing part	2 min.	Write ecchymosis on the board for students to copy and spell.
Question - What is the difference between a laceration and an incision? Answer - A laceration has jagged edges, while an incision has smooth edges in the wound. Question - What does a laceration with bright red spurting bleeding indicate? Answer - The laceration includes a damaged artery.		
c. Description of four bleeding control methods. 1) Direct pressure is the easiest and usually first technique used to control bleeding. a) You should place a clean or sterile dressing over the wound then put pressure with your hand over the wound. b) If you have no dressing, you may use your bare hand, but remember AIDS is transmitted by direct blood to blood contact, especially if the rescuer has an open wound on his hand. c) Pressure over a wound slows bleeding and allows clots to form. 2) Direct pressure and elevation. a) If direct pressure alone is not stopping bleeding, then elevation of the injured part may help (12-18".)	15 min.	Demonstrate direct pressure by holding hand over the imaginary wound. Demonstrate elevation with direct pressure by raising the effected arm 12-18".

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
b) Gravity will assist in slowing bleeding. 3) Seven pressure points of bleeding control. a) Pressure points are places where you find a pulse near the surface of the skin. b) You can compress the artery to stop flow to an area with a wound. c) Enough pressure to occlude the distal pulse is required, that is, you should feel no pulse beyond the pressure point you are holding. d) Reduced flow allows some time for clots to form, but you may need to hold pressure until reaching a medical facility. e) Location of seven major pressure points for bleeding control, same as pulse points. There are others but we will concentrate on these seven major pressure points. 1. Carotid - large artery in the neck which supplies blood to the brain. It can be found by finding the larynx or voice box and sliding fingers into the groove formed by the trachea on one side and a large muscle mass in the neck. Do not occlude both sides at once. It is used for head bleeding.		Demonstrate finding radial pulse. Have students find their own pulse. Place finger tips of radial pulse, hand over radial artery in the wrist of left hand. — Show overhead #3 diagram of the seven pressure points.
Question - Why not put pressure on both carotid arteries? Answer - You would cut off blood supply to the brain and your patient would become unconscious.		
2. The temporal artery can be felt at either side of head at the temple, use for scalp bleeding. 3. The brachial artery runs between your biceps and triceps, pressure here may control bleeding of the lower arms.		

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
4. The radial artery can be palpated (felt) at the wrist on the thumb side, used for hand bleeding. 5. The popliteal pulse can be found behind each knee, used for lower leg bleeding. 6. The femoral pulse is felt on either side of the groin, as it travels down each leg. It is used for bleeding of the lower extremities. 7. The dorsalis pedis pulse is found on top of the foot between the great toe and number two toe.		Turn off the overhead projector.
4) Tourniquet a) A tourniquet is the last resort for bleeding control and should rarely be used. b) Use a wide constricting band to stop the blood flow. Remember that there is no circulation distally. c) Used when a limb is considered sacrificed as too damaged.		—
d. Review 1) Review each pressure point by having students show on themselves the pressure points given. 2) Have students find several points on each other.		Call out the names of the pressure points and let students show the location of the pressure points themselves.
Question - How much pressure are we talking about for direct pressure? Answer - It depends on many factors including the size and depth of the wound, damage to nearby blood vessels or location on the body. Generally, a firm hold about 5-10 lbs worth is enough, but as often, experience is the key to know.		
e. Dressing, bandages, and bandaging techniques. 1) A dressing covers a wound to prevent further introduction of dirt and bacteria. It should be sterile. 2) A bandage holds the dressing in place and may be used to apply pressure to a wound.		Hold up dressing for class to see.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
3) There are several types of bandages, some of the most common are: a) Kling or cotton gauze b) Triangular or cravat c) Ace or elastic d) Any cloth material is O.K.	3 min.	Hold up different types of bandages as each are discussed.
4) The principles of bandaging are: a) Use clean or sterile material for a dressing that adequately covers the wound. b) Wounds are bandaged snuggly but not too tightly. c) Leave no loose ends. d) If bandaging arms or legs, leave the tips of fingers or toes uncovered. e) If bandage is too tight, loosen it. f) Always place the body part to be bandaged in the position it is to be left.		Turn on overhead projector. Show overhead #4 list of principles of bandages.
5) Techniques of three simple bandages. a) The circular bandage circles a limb, or body holding the dressing securely in place, used for easy uncomplicated areas. b) The figure 8 bandage is used in an area where there may need to be movement such as elbow or knee. c) The finger tip or stump bandage covers a wound at the end of a limb, such as finger or toe injuries. Cover tip with bandage, then secure in place by spiraling the bandage around the limb.	3 min.	Demonstrate bandaging techniques on a student volunteer victim.
3. Summary. a. Solicit questions from students.	4 min.	Turn off overhead projector

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Question - How could you best protect yourself from AIDS when dealing with the trauma victim who is bleeding?

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
Answer - The best solution for now is to wear protective surgical or other gloves. Good hand washing is important. Question - How long does it take to bleed to death? Answer - It would depend on the size of the wound and vessel injured, but for a major artery it would only take 1-2 minutes. --- b. Summarize the lesson's major points. 1) We have learned some simple anatomy of the circulatory system, that blood is forced from the heart in a pulse wave. A pulse can be detected where an artery near the skin's surface can be compressed onto a hard or bony surface. 2) We have seen the different wounds and have described distinguishing characteristics. a) Contusion - bruise closed wound b) Abrasion - superficial scraping c) Avulsion - torn flaps d) Laceration - jagged tear e) Incision - sharp edges f) Amputation - severed missing limb g) Puncture - impaled hole 3) We have identified seven major pressure points. The carotids, temporal, brachial, radial, femoral, popliteal, and the dorsalis pedis. 4) Next we learned the six principles of bandaging. a) Use clean or sterile material for a dressing that adequately covers the wound. b) Wounds are bandaged snuggly but not too tightly. c) Leave no loose ends.		— Show students on self when identifying each.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
d) If bandaging arms or legs, leave the tips of fingers or toes uncovered. e) If bandage too tight, loosen it. f) Always place the body part to be bandaged in position it is to be left. 5) Finally we discussed three bandaging techniques. a) Circular b) Figure 8 c) Stump or fingertip 6) It is important that you learn and be able to use this material. Stopping severe bleeding is easily done and may save many lives.		

Attachment #1

References:

Elo, Tom MD.:" Surface Trauma and Hemorrhage Control." Emergency Care, Assessment and Intervention. C.V Mosby Co. St Louis. 1974. pp 31-41.

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Karen Keith, Hafen, Brent. Prehospital Emergency Care and Crisis Intervention. Morton Publishing Co. Colorado. 1983. pg.185-225.

Karen, Keith; Hafen, Brent. First Responder a Skills Approach-2nd Edition. Morton Publishing Co. Colorado. 1986. pg. 103-115.

Philips, Charles MD. Basic Life Support Skills Manuel. Bradey Co. nad Prentis-Hall. Bowie Maryland. 1977. pp.63-71.

Attachment 2

Equipment and Visual Aids:

20 Chairs and desks for students

1 Overhead projector with extra bulb

1 Slide projector with carousel and extra bulb

1 Screen

1 Extension cord 10-12'

1 Pair bandage scissors

1 Pointer

1 Pair sterile gloves

20 4X4 dressings

20 4" bandages

20 1" bandages

1 Ace or elastic bandage

1 Triangular bandage

1 Battle dressing cloth bandage

Handouts:

1. Skeletal outline of class
2. Skeletal outline with correct responses filled out

Overheads:

1. Diagram of the skins anatomy
2. Diagram of the Circulatory system showing the vein-capillary-artery relationships
3. Diagram of seven pressure points used for bleeding control
4. List of the Six Principles of Bandaging

Attachment 2 Cont.

Slides: Can be purchased from Morton Publishing Co.

925 Kenyon Ave. Unit 4

Englewood, Colorado. 80110

"Trauma Series"

1. Title - Soft Tissue Injury
2. Diagram of an abrasion
3. Photo of an abrasion
4. Diagram of a contusion
5. Photo of a contusion
6. Diagram of an avulsion
7. Photo of an avulsion
8. Diagram of a laceration
9. Photo of a laceration
10. Photo of an incision
11. Diagram of a puncture wound
12. Photo of a puncture wound
13. Photo of an amputation

Attachment #3

RECOGNITION AND EMERGENCY CARE OF WOUNDS: BLEEDING CONTROl AND BANDAGING

1. Circulatory system:

2. Types of Wounds: Distinguishing characteristics:

   a.

   b.

   c.

   d.

   e.

   f.

   g.

3. Bleeding Control Techniques:

   a.

   b.

   c.

   d

4. Pressure Points for Bleeding Control:

5. Principles of Bandaging:

a.

b.

c.

d.

e.

f.

Attachment #3

RECOGNITION AND EMERGENCY CARE OF WOUNDS: BLEEDING CONTROl AND BANDAGING

1. Circulatory system:

Artery - Arterioles - Capillaries - Venules - Veins

2. Types of Wounds: Distinguishing characteristics:

a. Contusion	bruise (ecchymosis)
b. Abrasion	superficial scraping
c. Avulsion	torn, flaps
d. Laceration	jagged tear
e. Incision	sharp edges
f. Amputation	severed missing limb
g. Puncture	impaled hole

3. Bleeding Control Techniques:

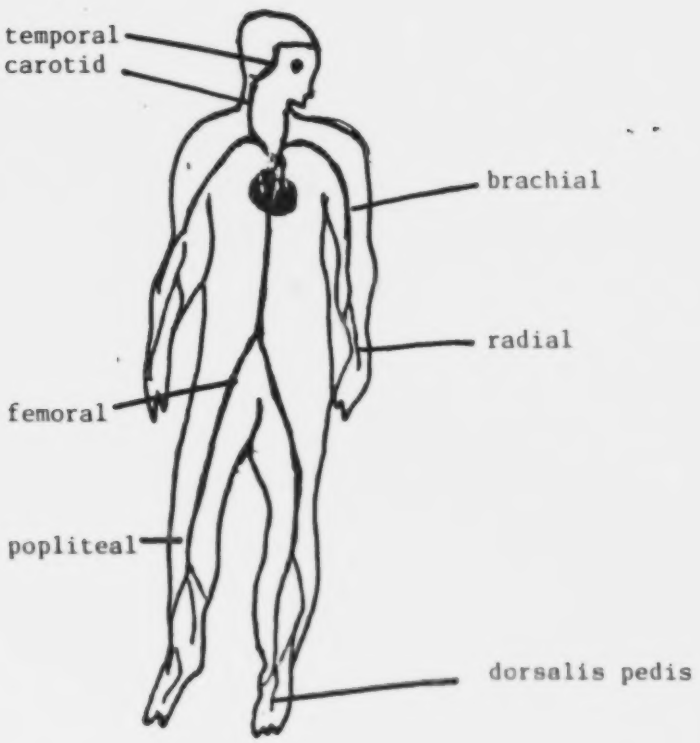
a. Direct pressure

b. Direct pressure and elevation

c. Pressure points

d Tourniquet

4. **Pressure Points for Bleeding Control:**



5. **Principles of Bandaging:**

a, Use clean sterile material to cover wound.

b. Bandage snuggly not too tight.

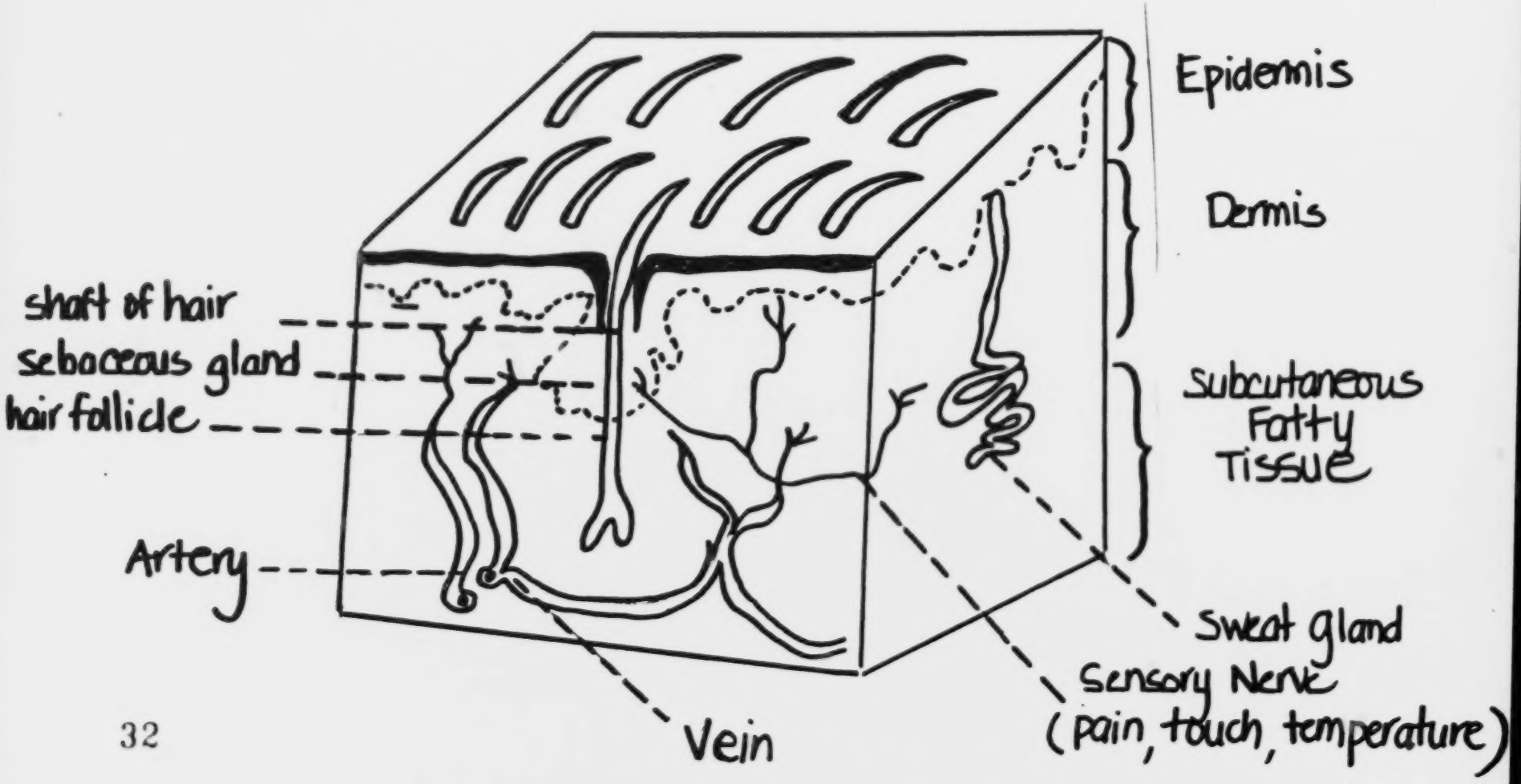
c. Leave no loose ends.

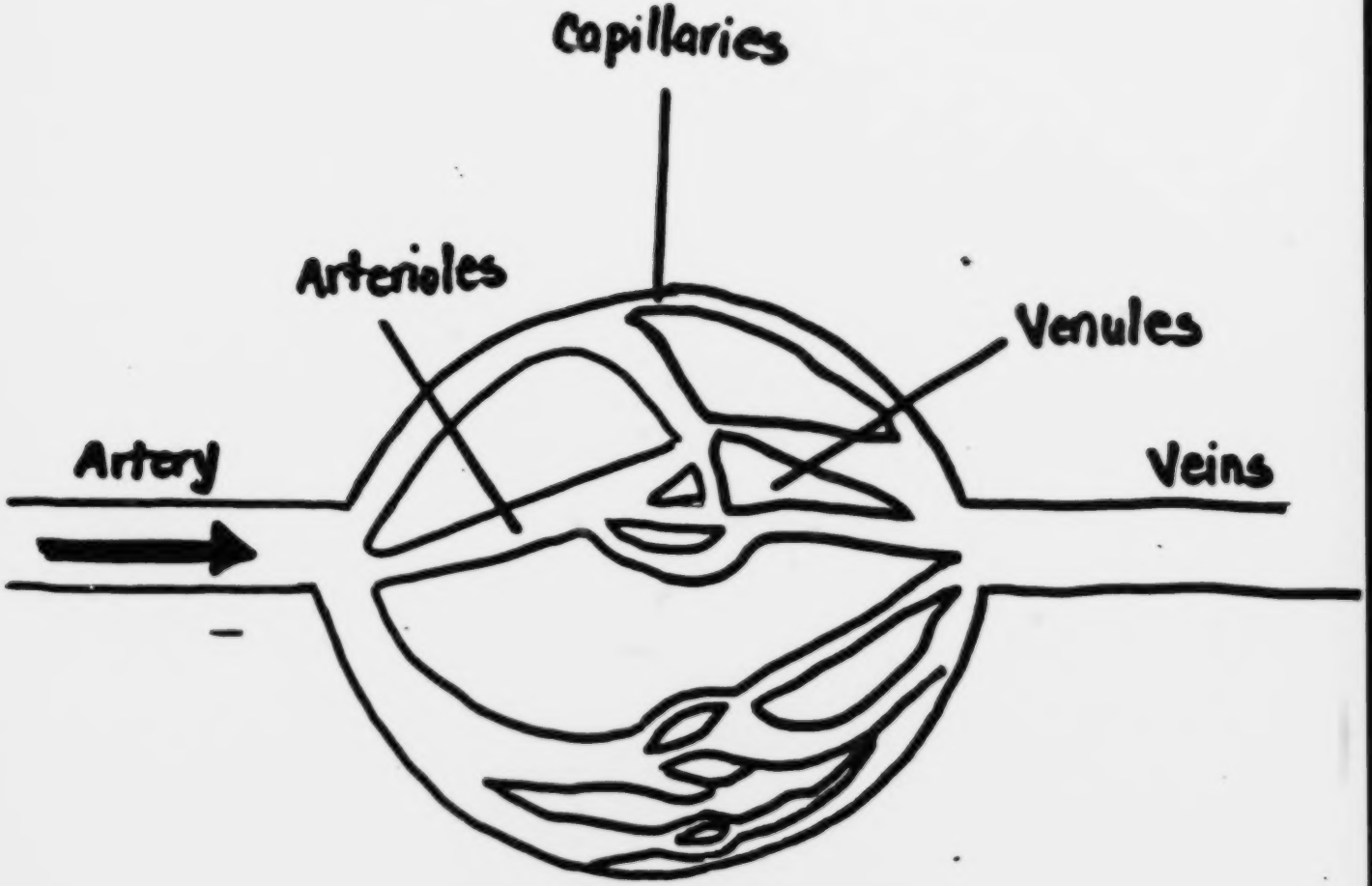
d. Leave toes, fingertips, uncovered if possible.

e. If bandage too tight, loosen it.

f. Place body parts into position to be left before bandaging.

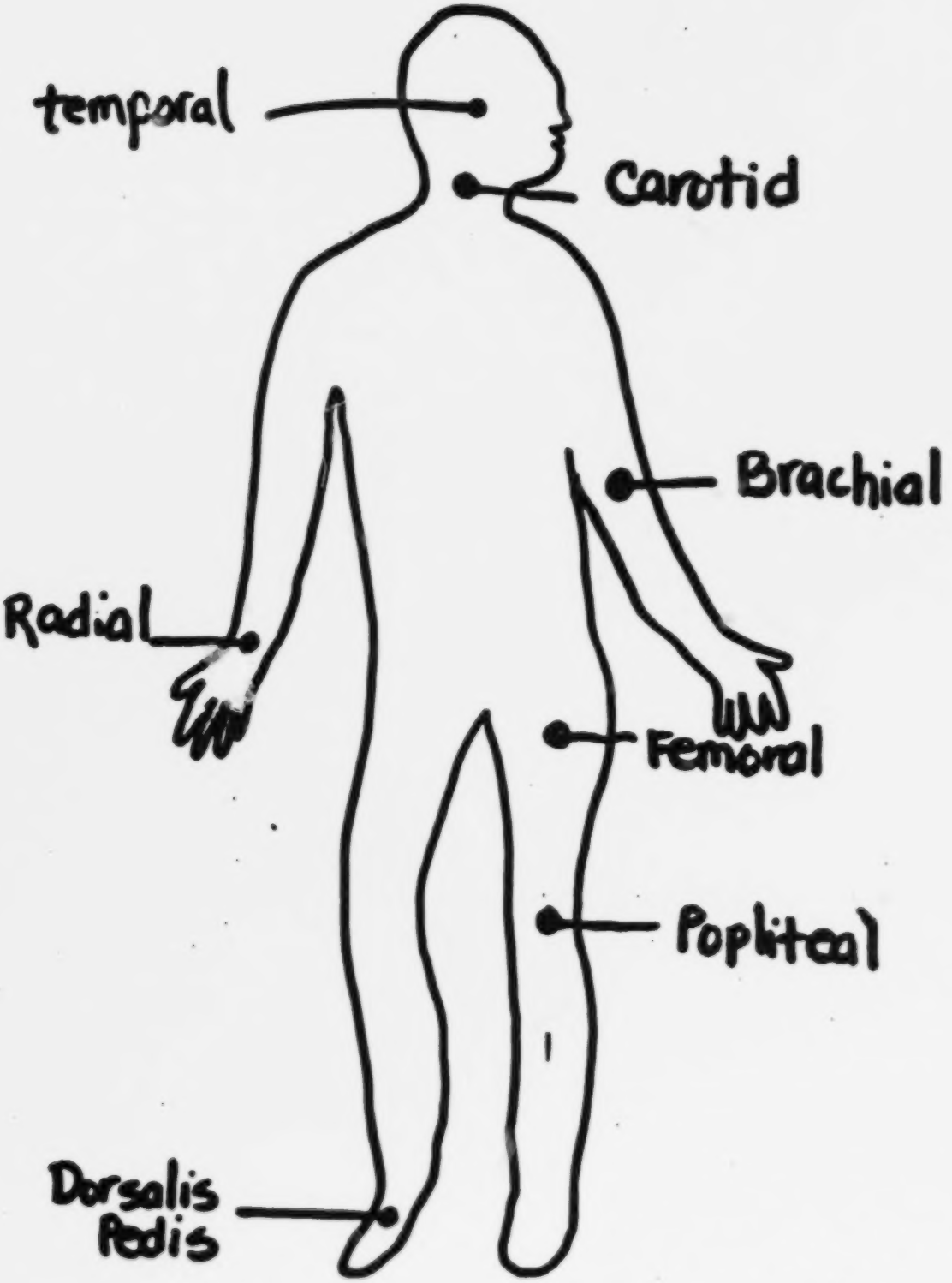
Three Dimensional View of the Skin





Circulation

Pressure Points



Principles of Bandaging

1. Use clean or sterile material for a dressing that adequately covers the wound.
2. Wounds are bandaged snuggly but not too tightly.
3. Leave no loose ends.
4. If bandaging arms or legs, leave the tips of fingers or toes uncovered.
5. If bandage too tight, loosen it.
6. Always place the body part to be bandaged in position it is to be left.

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